INTERACTIVE CONTENT AND DYNAMIC PUBLISHING – A VITAL PART OF AN NSO'S OUTPUT AND COMMUNICATION STRATEGY

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Abstract
There are far reaching changes occurring in the information industry, including the world of official statistics. The Australian Bureau of Statistics (ABS) is planning to put the user at the centre by giving to them a chance to speak directly with our data. Our catch cry has become 'freedom to share data will make data more valuable – but only if it's managed differently.'

The ABS mission is "We assist and encourage informed decision-making, research and discussion within governments and the community, by providing a high quality, objective and responsive national statistical service." Informed decision making presupposes a level of statistical ability which we know needs development within the Australian community. The ABS has an important leadership role in improving the statistical capability and literacy of our current and future customers. Our statistical output and communication strategy is vital to achieve the aspirational goal of a citizenry that uses statistics to make sensible, informed decisions, whatever their job, community or situation.

This paper outlines some aspects of the ABS output and communication strategy, how it has changed and how the strategy increasingly supports a diverse range of customers and their requirements. The paper finishes by examining a range of innovative ABS outputs that have a stronger focus on building statistical capability in communities with lower statistical literacy, such as our youth community.

PAST STRATEGY

In the past, the Internet relied on static web sites, desktop browsers and monolithic systems to deliver customer experiences. For the ABS, our output and communications strategy has relied on a website which delivers regular static publications and data at prearranged and predictable times (most monthly, quarterly or annually). The website content is heavily standardised and there are strict rules for the form and content of the publications, consisting of a standard summary, sets of tables, a small number of standard graphs and explanatory text.

These regular, standardised approaches are still relevant for a number of our most important customers, particularly as some of the information released can impact the economy, the financial sector and the stock market. However, many of our customers need more.

A DIVERSE CUSTOMER BASE

The ABS has a complex and diverse range of customers who use our products and expertise in different ways. These are documented in the "ABS Statistical Literacy Framework 2012" as:

- Government data producers and policy developers;
- Educators and students;
- The general community;
- Media and opinion leaders;
- Business, including small and medium business, industry associations and large business; and,
- not-for-profit organisations.

Customers span those with low statistical capability and familiarity with the data to those with very high statistical capability and familiarity with the data as shown in the following graphic. We need to encourage people, to develop their statistical capability. Of particular interest to the ABS, in the context of this paper, is how we engage and educate our children and youth so that they develop the statistical ability to make informed decisions about their own lives; and, through later career and vocation, to make informed decisions for their community and potentially the entire nation.
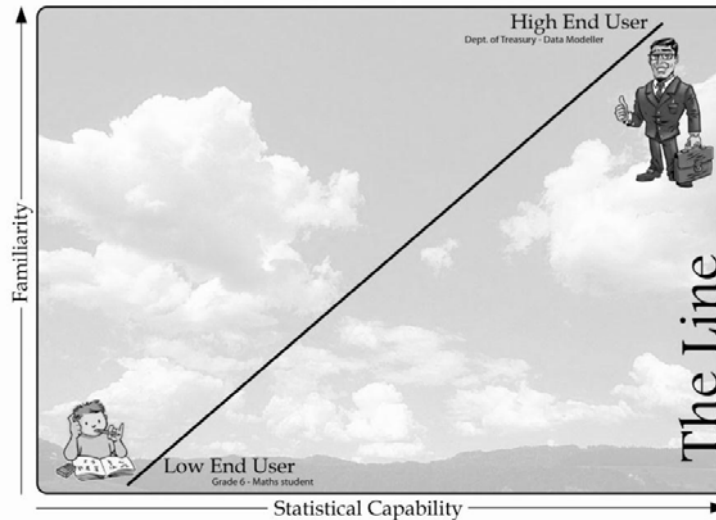
Our customer intelligence indicates that, along with statistical capability and familiarity with the data, there are a number of factors which influence how our customers wish to access and use our information.

The explosion of social media has led to an increase in expectation that people will be able to join in a conversation about a wide range of topics, government or otherwise, and expect to be heard. Social Media is becoming an important factor in raising the profile of an organisation and is crucial to increased ranking on search engines such as Google. The ABS social media exposure is continuing to increase. Of 94 Australian Government Twitter accounts on record in 2011, the Census account attracted the highest number of followers (around 18,000) in a comparatively short period of time.

The quickly growing open government initiatives around the world seek to empower citizens, to help businesses and to create value in a positive, constructive way. Adopting the principles of open data allows statistical organisations to increase access to data and metadata as a critical component of our mandate.

Customers are increasingly likely to use search as their primary tool to find content instead of navigating directly to a particular website, such as the ABS website. Analytics show that over 70% of accesses to the ABS website are mediated via search engines such as Google instead of through the homepage.

Many customers are no longer just 'readers' of the Web. They are often 'protagonists' of the Web. The 'digital natives' want to play an active role to disseminate, to share, to discuss, to promote and to improve information. They are now 'co-stars' in the production of information. We have the opportunity to help them interconnect and join, to summarise and compare, to monitor, extrapolate and to infer. Perhaps the most important, and humbling, aspect of any dissemination strategy is the realisation that the content we create is not the only important content. Some of the most visited websites nowadays exist purely because of their interactive and collaborative approach.

High statistical literacy customers such as government data producers and business are increasingly seeking access to detailed fully described macro and confidentialised micro data. They want to integrate ABS and non-ABS data across traditional and non-traditional statistical subject matter boundaries to address complex problems. Customers are expecting an 'assemble to order' environment where they can add or change content themselves, using various techniques to bring together information ideas and data from different sources in order to produce integrated, meaningful content.

Some are seeking direct and automated access into our data via machine to machine interfaces so they can integrate it with other data. They dynamically access ABS data to provide data and tools to allow their customers to generate their own tables, charts and maps online in their specialist portal.

 Other users such as educators, students and the general community are seeking easy access to summarised content and want interesting stories of relevance to them and their communities using ABS data. They want simple and understandable statistics that paint a picture of Australia's society, health, economy and environment. These statistics could be represented through text, audio visual, infographics and data visualisation tools. For our younger customers, this could even be represented via games.

Our users want to increase their statistical literacy by understanding how to apply data to their areas of interest, and are seeking clear guidance and advice from independent experts like ABS. They want stories from the data and about the data.

Some customers want the statistics for their own decision making and some seek it to republish and reuse. It is important to the ABS brand that when ABS data is used, the source is attributed as the ABS. It is also important where possible that we assist customers to avoid reaching invalid conclusions by adequately describing the quality and attributes of the data. It is crucial that metadata is provided to help guide our customers in their analysis of the data.

Many customers expect us to supply data using agreed data structure definitions in formats such as SDMX. This is effective for both parties and allows them to 'pull' or even better access our information on the fly. Ultimately, agreement to standards for metadata and data across the statistical industry will allow customers to access multiple data sources more easily and consistently, regardless of source.

Web 3.0, the evolution to an "intelligent web", is coming. This intelligent web will address the lack of structure and organization in Web 2.0 by linking information from disparate sources and systems to make the web even easier to use, more efficient, and more valuable to its customers. The ultimate goal of this "intelligent web" is to enable computers to do more useful work and to develop systems that can support trusted interactions over the network" (http://www.w3.org/standards/semanticweb/). Web 3.0 presents real opportunities for statistical organisations to meet the demand of customers to find, share, and combine information more easily. It will be designed so that information can be readily interpreted by machines, so machines can perform more of the tedious work involved in finding, combining, and acting upon information on the web.

Many customers have a strong interest in information relevant to geographic areas. With location awareness built into many applications in the market, tools such as Google Maps and an increasing level of geocoding of data, customers expect that information can be accessed or referenced geographically in the context of their current position or area of interest.

With the constant evolution of technological devices, customers expect statistics that can be accessed on different devices and across an increasing range of technology channels, with a consistent experience regardless of the channel used.

In summary, our customers expect:

- high quality statistics that can be accessed and shared in a timely manner, designed to respond and adapt to different devices and across an increasing range of technology channels;

- to start with data at the indicator level and be able to progressively get access to more and more detailed data, in one or multiple topic areas;

- access to our metadata;

- new dynamic and interactive experiences that are engaging, such as data visualisation and geo-coded data accessible via mapping tools;

- to easily gain valuable insights through information remix;

- to apply the increasing number of tools available in the wider environment to the data;

- to be able to participate in discussions on ABS data, and collaborate on using this data in many different ways;

- to be able to quickly assemble views of data for new situations or when new data is released;

- to integrate ABS data more easily into their own environments and to integrate ABS data with data from other sources;

- to reuse/republish data.

TRANSFORMING OUTPUT AND COMMUNICATION

To satisfy these demands, the ABS is transforming its current approach. We realise the ABS presence on the web is no longer defined by our primary website but by our visibility and agility across multiple platforms. Successful online communication is based on understanding how different types of customers interact online and then structuring the content and presentation of the material accordingly.   In the same way that the world has successfully made the transition from the print to the web, we must now marshal our efforts to face the big challenge of adapting to the world of web 3.0, mobile devices and social media.

To support this vision, the following principles will guide us:

- enhance coherence through storing the most detailed and fully described multi-dimensional data in an output warehouse as the 'one source of truth';
- promote and use standard approaches to metadata, not just within the organisation but across the statistical and information industries;
- collaborate with similar organisations to share approaches and tools;
- assemble the many varieties of potential outputs from the 'one source of truth';
- dynamically compile content to meet the needs of different levels of statistical literacy. Whilst there will be some static content, increasingly, content will be derived dynamically from underlying detailed data and metadata;
- assemble views of the data and metadata, through a standard library of geographic, graph and visualisation tools;
- provide open, timely, inexpensive access to public sector information;
- enable access to data, including large volume data, using machine to machine services;
- focus on customer needs through the provision of quality, relevant and timely statistics in ways that customers can easily find and understand;
- provide appropriate content regardless of the channel or device used by customers;
- develop content using evidence-based website metrics and business partner and external customer consultation;
- facilitate re-use of ABS data by external customers and third party portals while ensuring visibility of the ABS brand; and
- ensure content designed to build statistical capability is visible alongside data, but not intrusive.

A FLEXIBLE ARCHITECTURE FOR DYNAMIC PUBLISHING

The transformation requires an architecture (including business, systems and information architecture) which has separate layers for content, for delivery and for presentation.
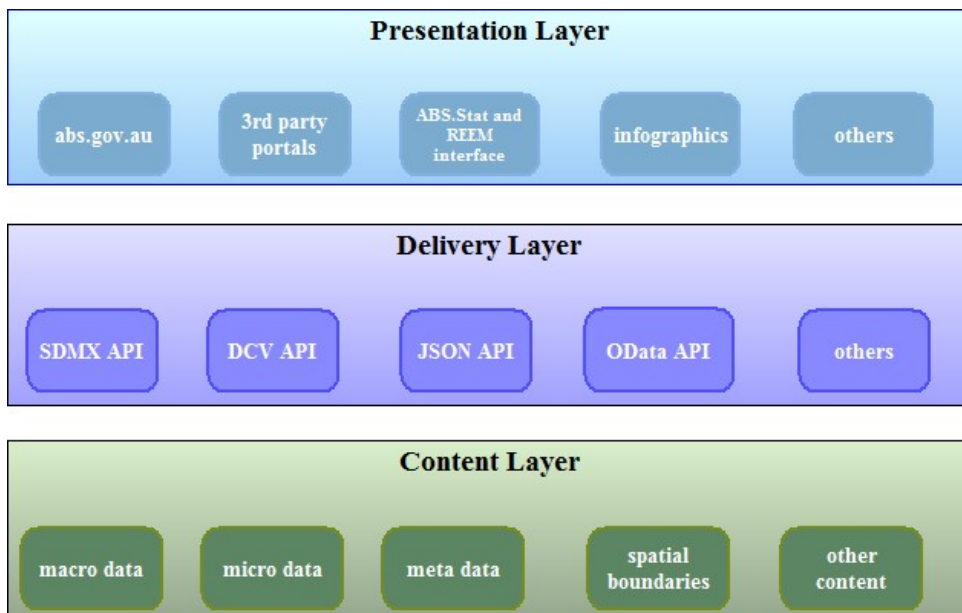
CONTENT LAYER

Separating content from delivery and presentation is one of the key elements of the transformation. We have to be able to build, catalog, describe, store, protect and access our content in a consistent manner, independent of how our customers will eventually use and consume it. Instead of creating traditional publications, where summary data, detailed data, analysis and stories about the data may exist in one monolithic and static publication, we will focus on creating the underlying elements of content.

Using an 'assemble to order' process, these elements will be combined as required to meet different user needs. As an example, detailed content about the Consumer Price Index might be required by policy developers and businesses but a summary of the same information in the form of an infographic could be used by everyone.

We are developing a Metadata Registry and Repository (MRR) in line with the emerging global standard "Generic Statistical Information Model" http://www1.unece.org/stat/platform/pages/viewpage.action?pageId=59703371. Our statistical production processes will be transformed to produce the data and metadata using this standard. Other data providers are considering the use of this standard to improve the ability for data to be sourced across the statistical and information industries. The Metadata Registry and Repository will eventually store metadata including stories and descriptive text.

The ABS has commenced work on the conceptual design for an Enterprise Data Warehouse which will, amongst other functions, support the output and communication functions by providing the ability to store large amounts of micro, macro and spatial data as well as other content, including data from other organisations and sources.

DELIVERY LAYER

The delivery layer will link the content to the presentation of this content. There are two important aspects of the delivery layer:

- the tools that allow customers and systems access to the content, and
- the services that will ensure our most detailed content can be transformed and made confidential before presenting it to our customers.

Tools to allow customers and systems access to our content will draw upon on standard application programming interfaces (APIs or web services). These tools will provide access paths into ABS content at the lowest level of granularity, enabling rich content relationships and semantic navigation. Using the published metadata and querying the output data warehouse enables the creation of dynamic pages which will always be up to date.   Through the use of APIs and other tools, content can be sliced and diced, and combined with other content.

The ABS legislation requires the ABS to protect the confidentiality of our providers. To meet this obligation, we have developed a delivery layer service which can analyse data in a flexible way, without visibility of the underlying unit records. This service is available through our Remote Execution Environment for Microdata (REEM). We are currently working with stakeholders to make relevant datasets available.

To deliver macrodata, we have chosen the OECD product .Stat. The ABS version ABS.Stat is accessible through a user interface and/or services which can provide data in SDMX and other formats. Customers are able to connect presentation layer applications to these services.

PRESENTATION LAYER

The presentation layer will assist us to effectively address customer's different needs. It will allow us to present our content in many different ways, in different formats, and on different devices. The presentation layer for ABS statistics will not be solely the preserve of the ABS, but will also be provided by other parties. It will encompass an increasing number of general and tailored applications, provided by us or by others, including any of our wide range of customers.

Some of these applications use data which has been extracted and built into the application, and which have a strong focus on engaging with, and building statistical literacy, of youth. These include:

- Tailored infographics or facts for facebook
  < https://www.facebook.com/#!/absstats?fref=ts > , twitter and the ABS website.

- The Census Experience at Australia's Questacon National Science and Technology Centre, a planned highly interactive hands on exhibit which uses a variety of different methods of presenting Census data, including an ancestry map, a data cube, a tilt table and a word cloud.
- Dataman - a superhero character, with both a life size physical persona (costume) that is used at community events and a cartoon persona, who presents an exciting and educational journey through the collection, processing and use of Census data.
- Run That Town - a highly interactive mobile game that puts the player in charge of any Australian neighbourhood and challenges them to make planning decisions based on 2011 Census data to boost popularity, grow the town and keep the locals happy. The player succeeds by evaluating the Census data and making sound decisions on the types of projects to undertake. The application supports the ABS efforts to develop statistical literacy and has already been very successful, particularly with children and youth.
- Spotlight 2.0 – which takes data from the 2011 Census of Population and Housing and turns it into a simple interactive movie, to show just a few of the interesting things that the Census can tell about Australia's people and population. The application allows people to dynamically interpret Census data, in a way that relates specifically to them – when they were born, where they live, who they are. Once a player has explored Spotlight 2.0, they can create an infographic - a personalised snapshot of the individual's numbers that can be shared via social media.

Examples of ABS applications which dynamically access updated data are:

- the current website interface and the interactive user interfaces for REEM and ABS.Stat, which cater for customers with high statistical literacy; and
- ABS Stats – a mobile application designed to provide all types of customers with Key Indicator data, Population Census information and the current Australian population in a fast, flexible and easy to use format. ABS Stats uses Web Services to extract relevant data from ABS data stores and present it in different geographic regions. In a year since its release there has been nearly 13,000 downloads of the ABS Stats app and it reached the #1 downloaded utility application in Australia in less than one week. With the recent release of Australian electoral boundaries mapped to Census demographics, this usage has leapt to 20,000 downloads.

SUMMARY

This paper articulates the need to evolve from a static publishing approach towards a layered approach which allows us to assemble content elements in a number of ways suited to our varied customer needs. This paper recognises the customer is no longer just a 'reader' of the Web, todays web customer is a 'protagonist' of the Web. They increasingly play and want to play an active role to disseminate, to share, to discuss, to promote and to improve information.

Improved information access through a variety of interactive tools will enable the ABS to communicate statistics in more engaging and understandable ways. This contributes to our efforts to raise statistical literacy levels amongst our customers and the Australian community; helping us to help Australians to use statistics to make sensible, informed decisions.

This approach provides the capability to cross-reference, interconnect and remix statistics from many subject matter areas with the potential to introduce a new level of openness of information available to researchers, policy makers and other analysts. Small steps or large, the ABS is committed to this transformation as one worth doing and recognises many other NSOs and international agencies are making similar changes too. We look forward to collaborating with other agencies recognising the breakthrough potential these new dissemination approaches provide.